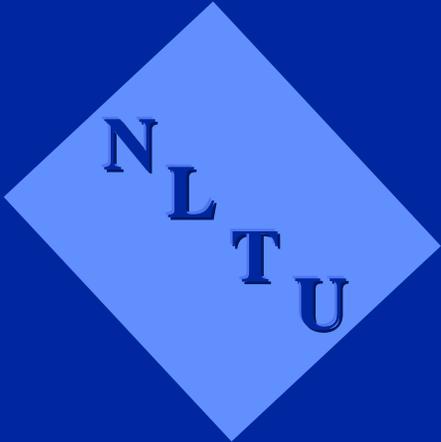




Process Measurement and Standardization

- Lesson 1 Select In-Process Measurements
- Lesson 2 Standardize and Collect Data
- Lesson 3 Analyze & Improve the Process



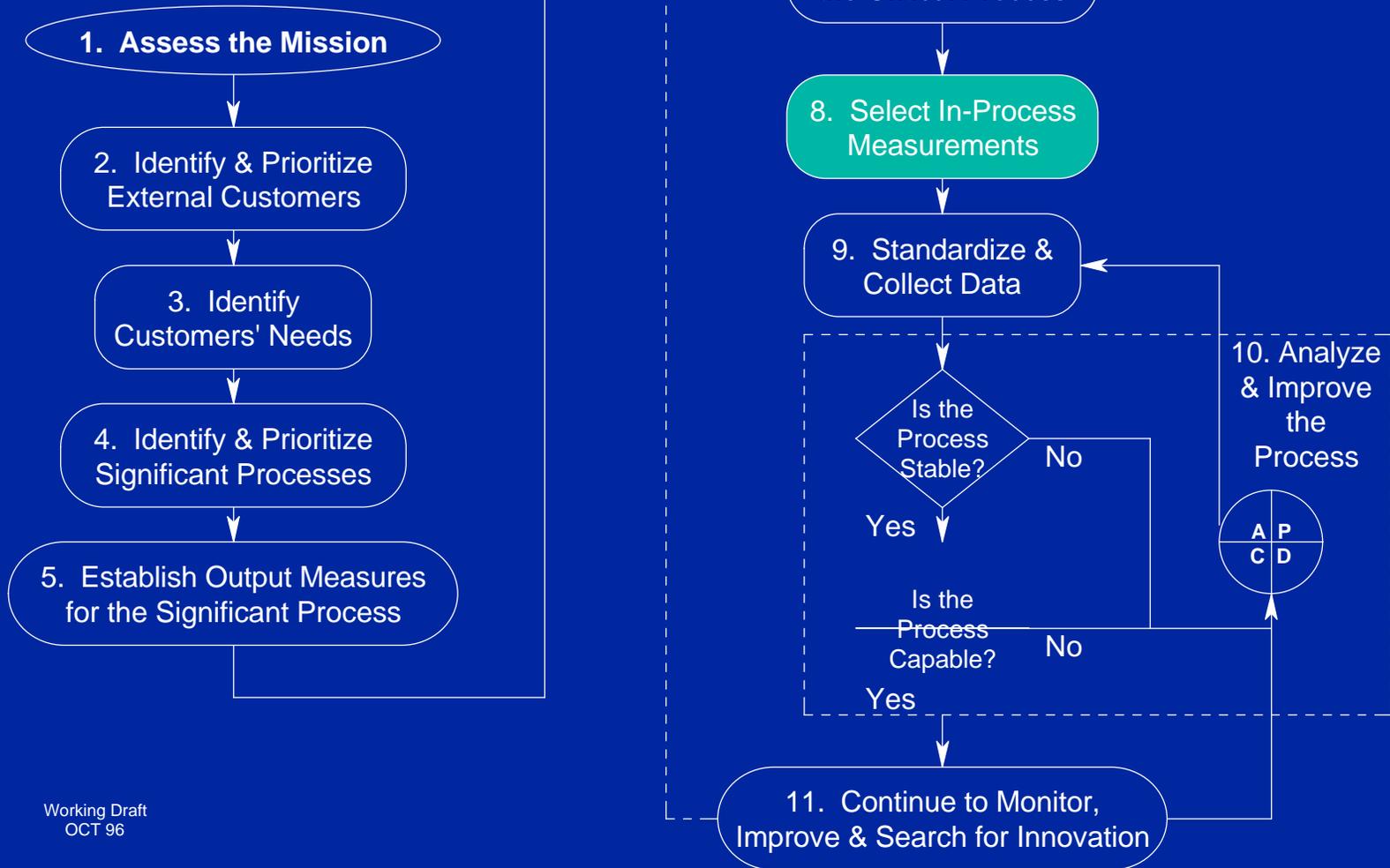
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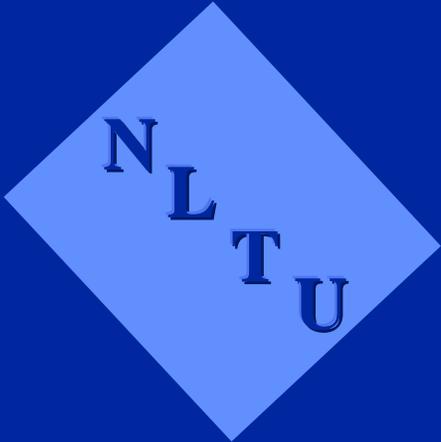
Select In-Process Measurements

Learning Objectives:

- ◆ Define output and in-process measurements
- ◆ Describe how to select process measurements
- ◆ Describe how to construct a Process Measurement Chart

Process Management Flowchart





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Does the Refined Process Produce a Product or Service Which Meets Customer Needs?

- ◆ The answer to this question requires data
- ◆ The data must come from measurements of processes that produce key quality characteristics
- ◆ The collection of data used in measurement must be planned

Things to Consider When Developing a Data Collection Plan

- ◆ What will you do with the data?
- ◆ What type of data will be collected?
- ◆ How will you collect the data

Things to Consider When Developing a Data Collection Plan

- ◆ Who will collect the data?
- ◆ From what sources will the data be collected?
- ◆ How often and how much data will be collected?

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Process Measurement Chart

Process Step	What data are being collected?	Who is collecting data	Data collection method	Frequency of data collection	Data collection form	How will data be analyzed?	Frequency of review	Who reviews?	Comments

How to Select In-Process Measurements

- ◆ Review current in-process measurements to determine whether they reflect customer needs
- ◆ Compare Key Quality Characteristics Worksheets with the selected process to identify quality characteristics produced in this process
- ◆ Develop a list of possible process measurements for the identified key quality characteristics

Key Quality Characteristics Worksheet

Customer Needs Customers perceive quality when they receive...	Operational Definition How do customers define the quality characteristic?	Output Measurement What can I measure to tell me if I am meeting my customer's needs?
Material with adequate shelf life	When received by customer, material must have 80% of the suggested shelf life from date of manufacture remaining	<ul style="list-style-type: none"> ◆ Shelf life remaining when received by Supply Center ◆ Shelf life remaining when order shipped
Undamaged material	Material is functional in accordance with designed operation and has no aesthetic blemishes such as scratches, chips, cracks, dents or breaks	<ul style="list-style-type: none"> ◆ Damage when received by Supply Center ◆ Damage when order shipped to customer
Certification documents included with material	When required, certification documents are included, match the product serial number, and are complete, undamaged and legible 100% of the time	<ul style="list-style-type: none"> ◆ Condition of certification documents when material received at Supply Center ◆ Condition of certification documents when order shipped to customer
Orders received quickly	Orders are received by customer within 5 working days of receipt a telephone or fax order (Priority) Orders are received by customer within 15 working days from postmark for mailed order or Date Time Group (DTG) for message order (Routine)	<ul style="list-style-type: none"> ◆ Cycle time between Supply Center receipt of telephone or fax order and material receipt by customer for priority orders ◆ Cycle time between postmark or Date Time Group and material receipt by customer for routine orders

Video Presentation

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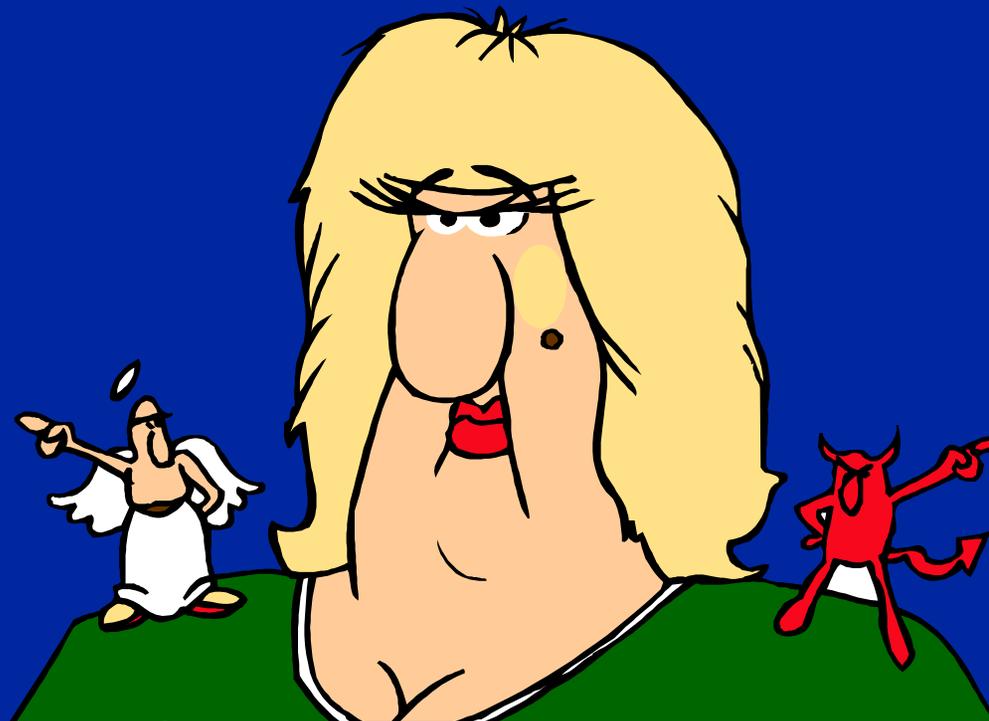


How to Select the Best Measurements

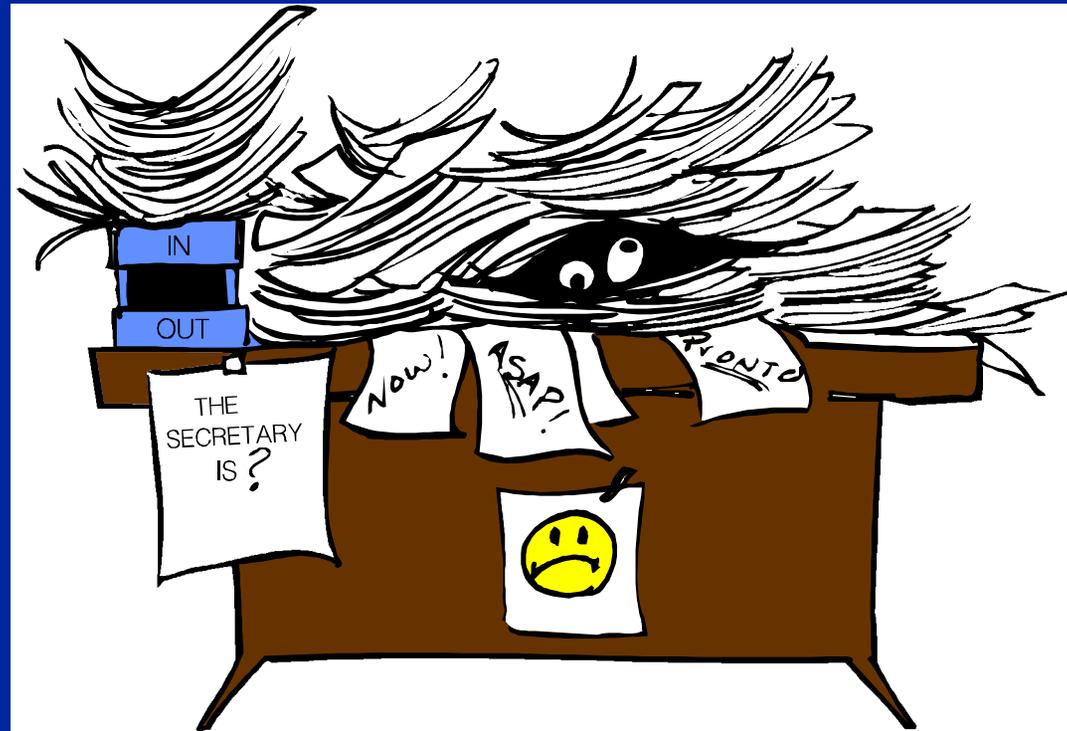
- ◆ Review the list of possible process measurements
- ◆ Consider the effect of measurements on employees
- ◆ Select the measurements that best determine whether process performance can meet customer needs

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Will the Measurements Encourage Positive or Negative Behavior?



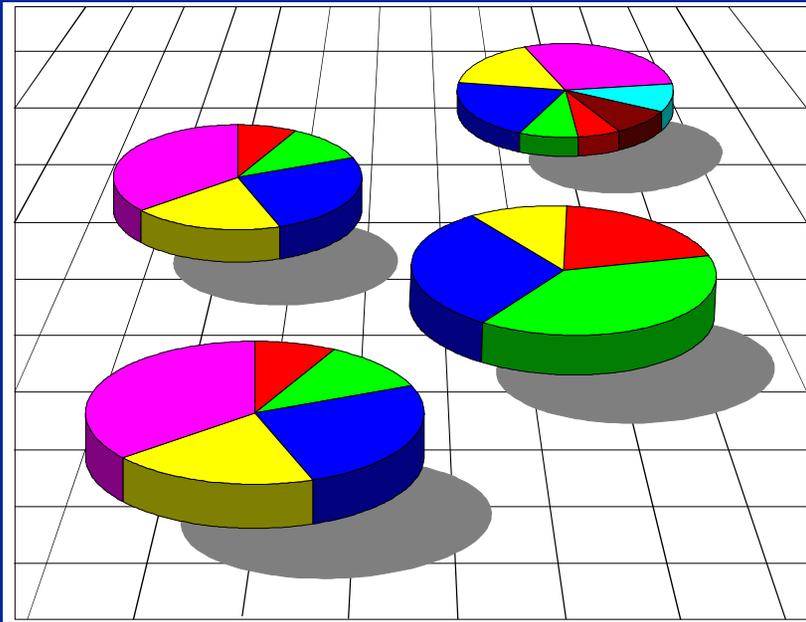
Keep Measurements Simple



Data Rich and Information Poor

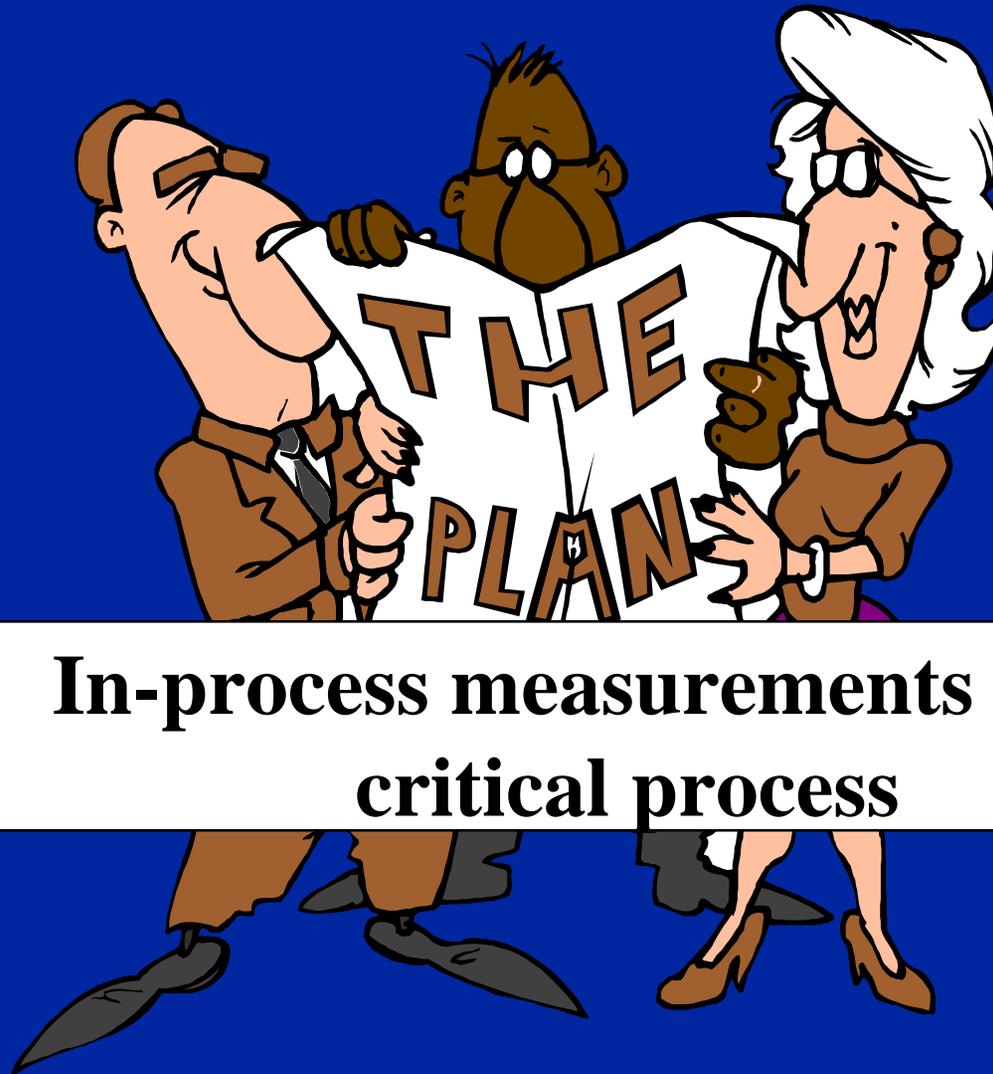
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Can Performance Meet Needed Goals?



Compare the results of measurement data to customer needs

Product of Lesson 1



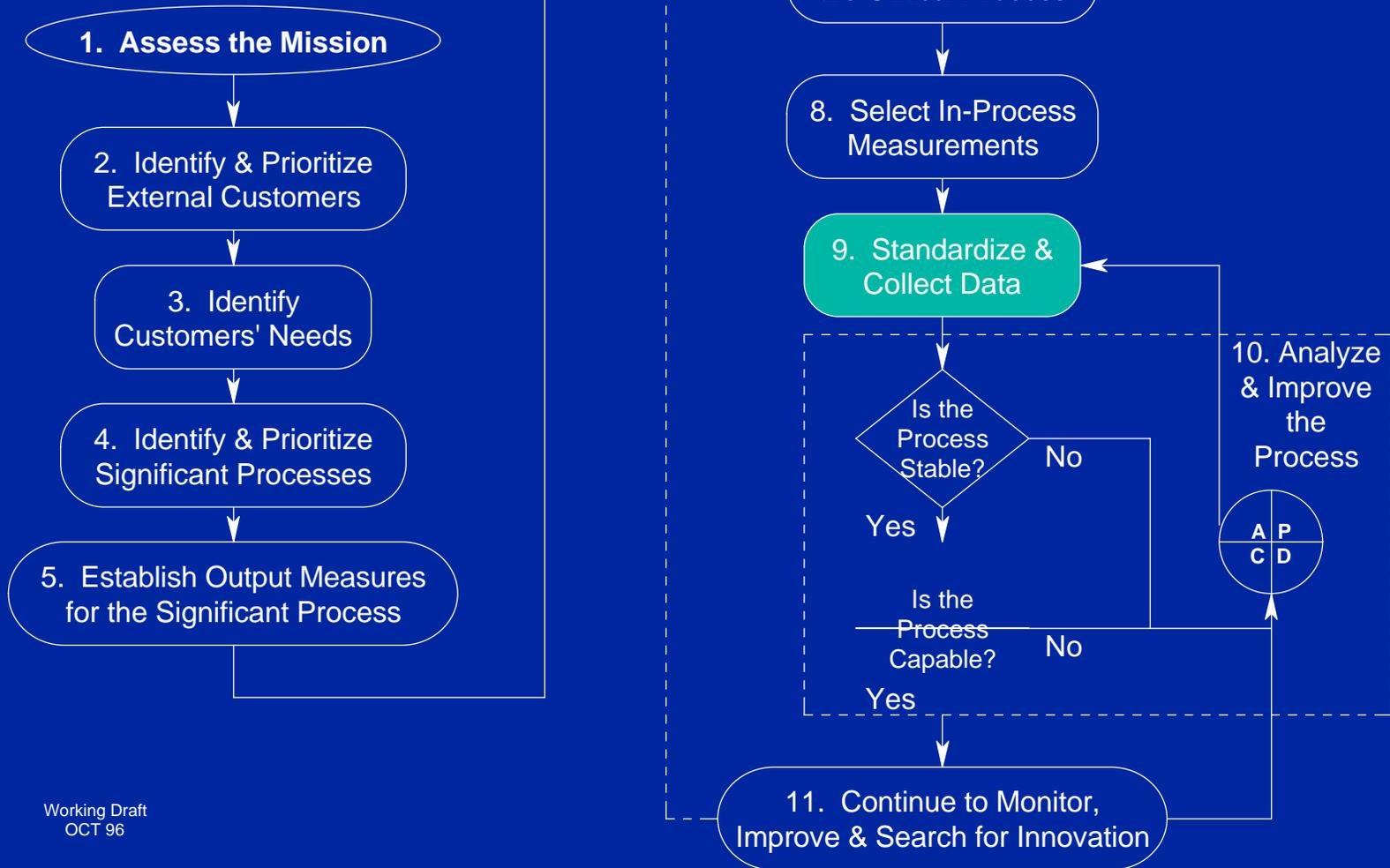
**In-process measurements for the
critical process**

Standardize and Collect Data

Learning Objectives:

- ◆ Explain the importance of process standardization
- ◆ Explain how to achieve process standardization
- ◆ Explain the importance of baseline data

Process Management Flowchart

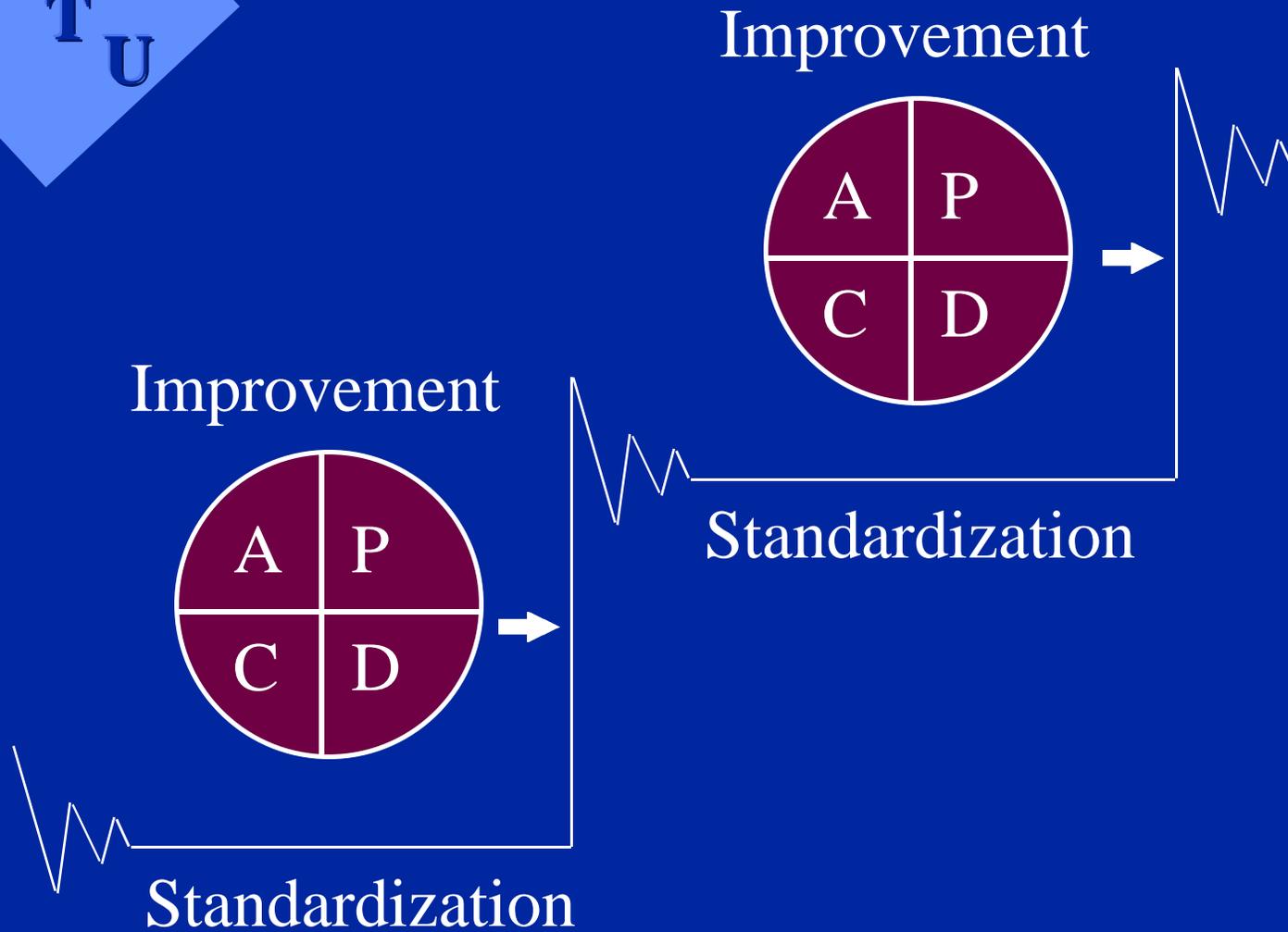


Standardization

- ◆ Performing the present process as it is defined
- ◆ Benefits of Standardization
 - ◆ Provides reliable data
 - ◆ Is required to change the system
 - ◆ Builds trust
- ◆ Standardization and Improvement
 - ◆ Standardization - before improvement
 - ◆ Baseline - the starting point in any improvement

Process Standardization

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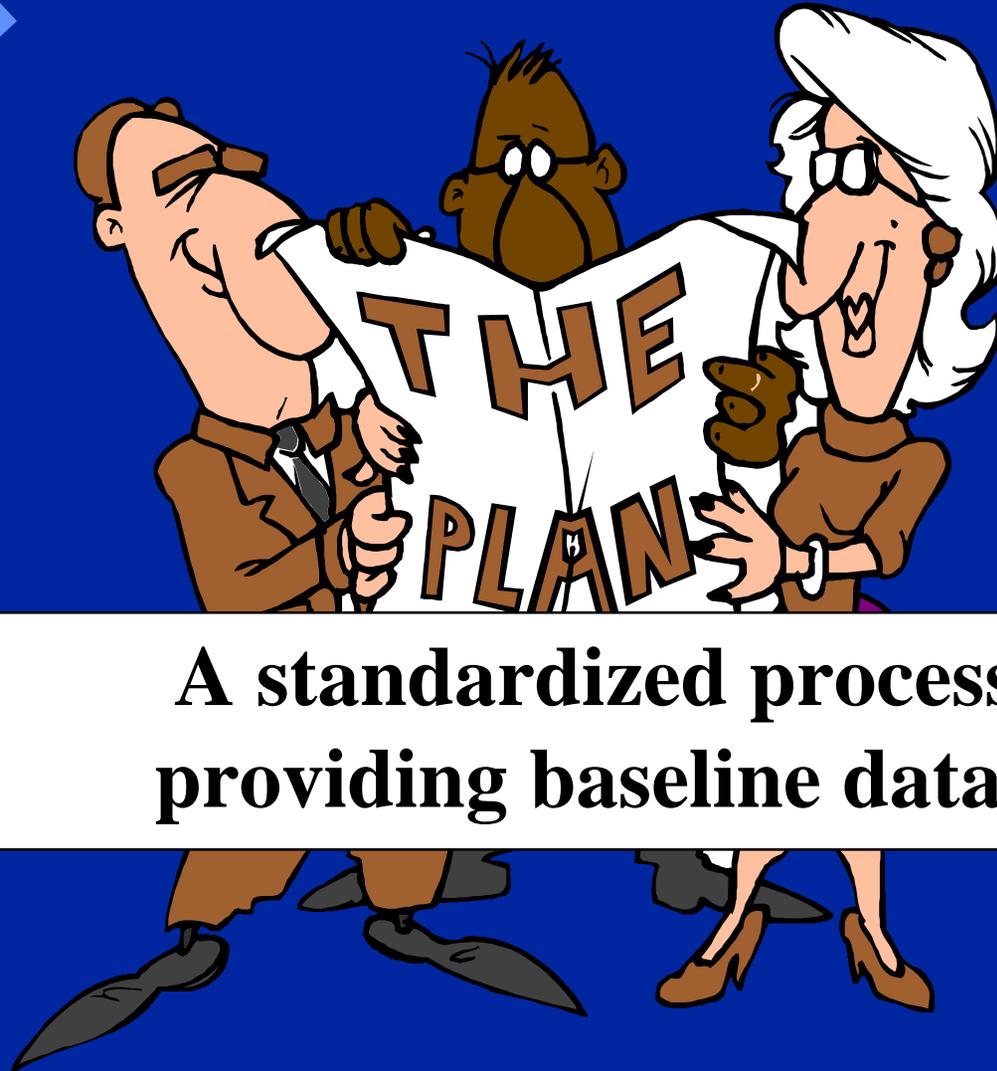


How to Achieve Standardization

- ◆ Identify and remove barriers
- ◆ Demonstrate benefits
- ◆ Train
- ◆ Recognize/reward



Product of Lesson 2



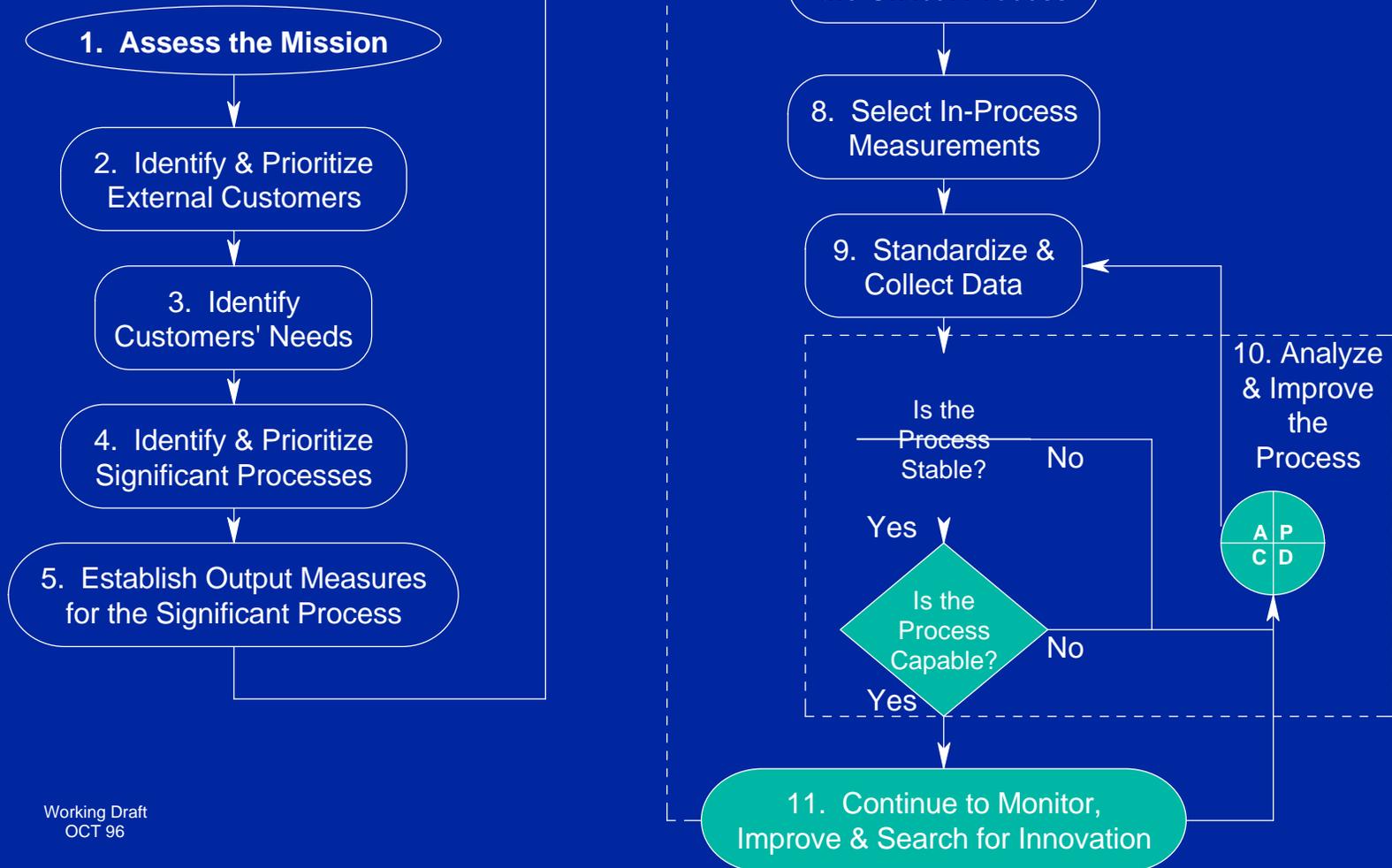
**A standardized process
providing baseline data**

Analyze & Improve the Process

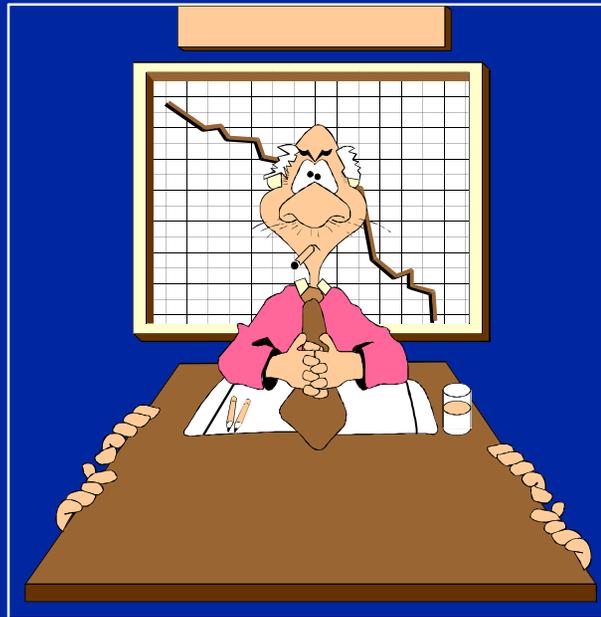
Learning Objectives:

- ◆ Explain the importance of assessing and achieving stability of a process
- ◆ Explain the importance of assessing and achieving capability of a process
- ◆ Explain the importance of continually improving a process

Process Management Flowchart



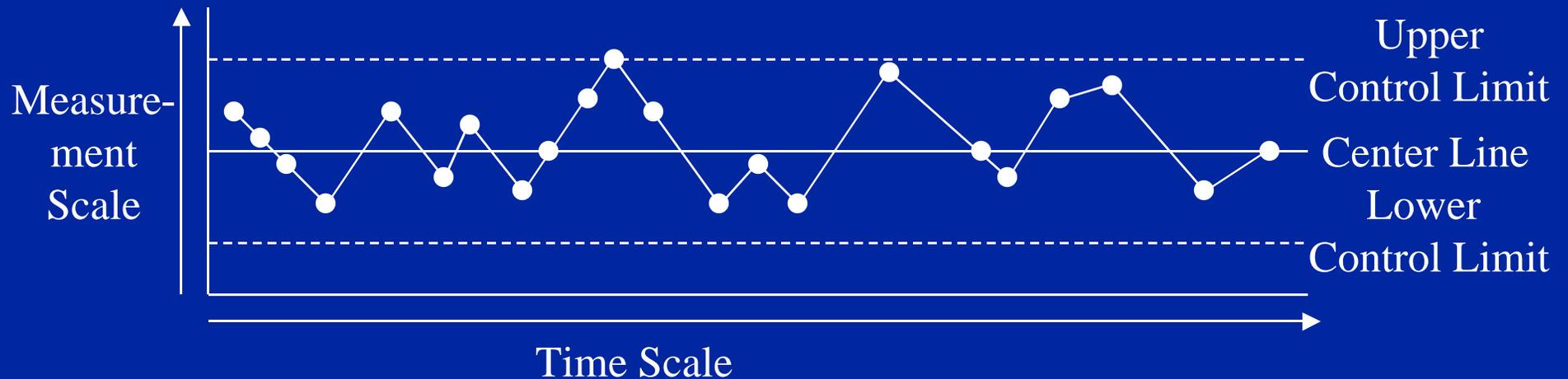
Process Control versus Process Improvement



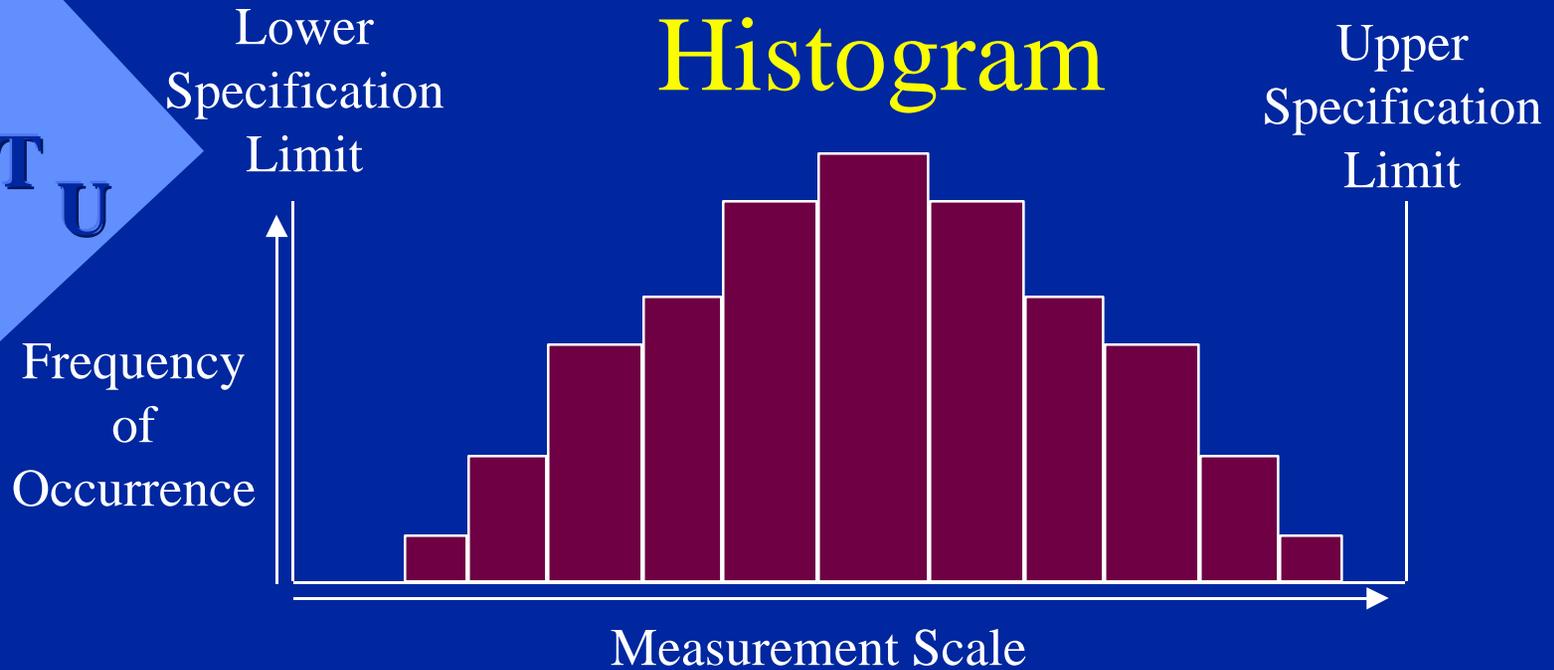
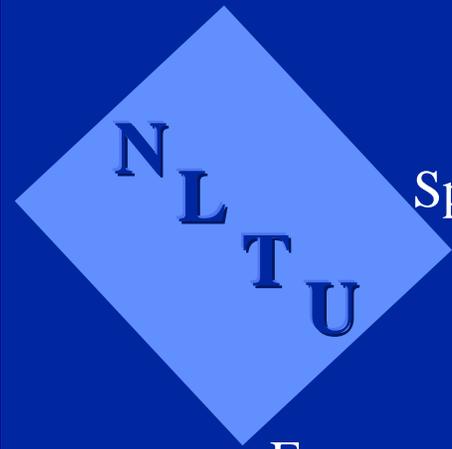
The decision to act is made after analyzing
measurement data

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Control Chart



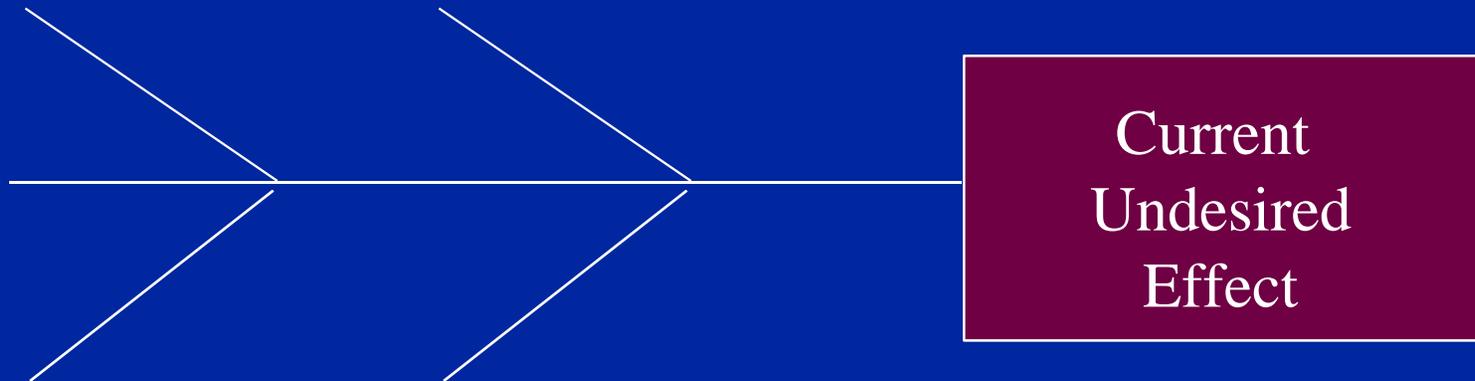
- ◆ Graphic display of process variation over time
- ◆ Used to determine process stability



- ◆ A picture of process capability
 - ◆ Time independent
 - ◆ Order of data not important
 - ◆ Performance of process within specification limits
 - ◆ Prerequisite is stability

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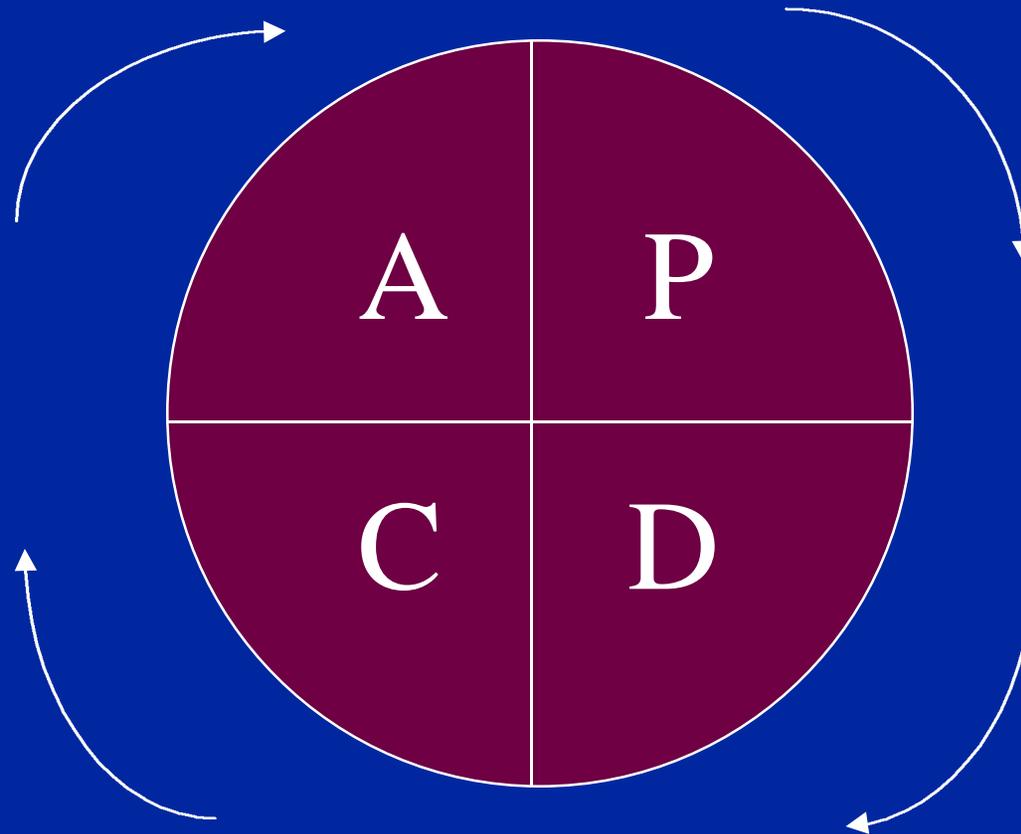
Root Cause Analysis



- ◆ Identify root causes
- ◆ Verify causes with data

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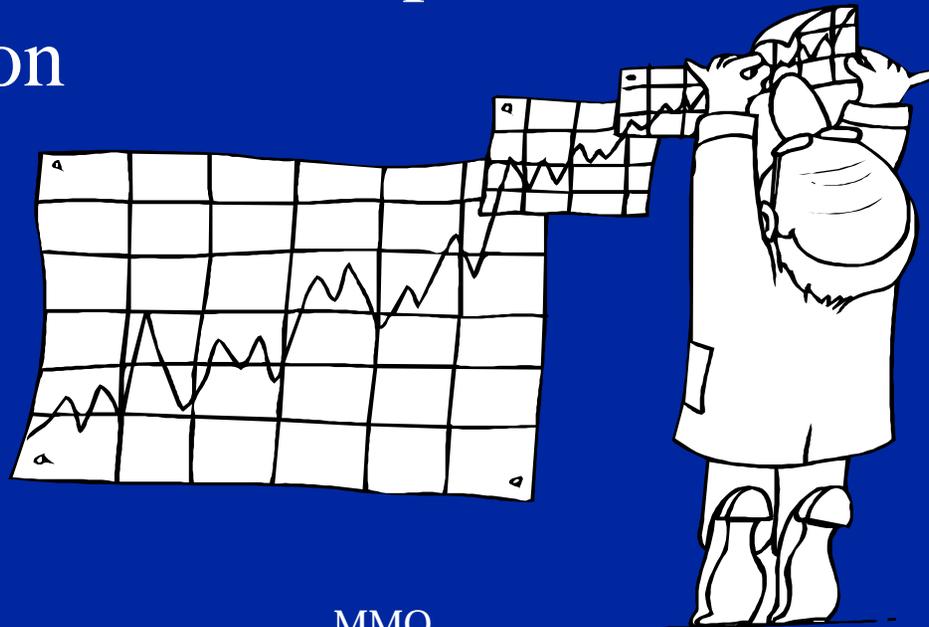
To Act on Causes of Variation...



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Holding the Gains

- ◆ Standardize the improved process to hold the gains
- ◆ Continue to monitor, improve, and search for innovation



Product of Lesson 3



**A predictable process that is
“on target with minimum variance”**